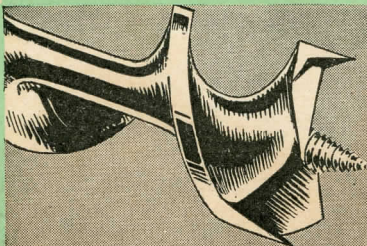
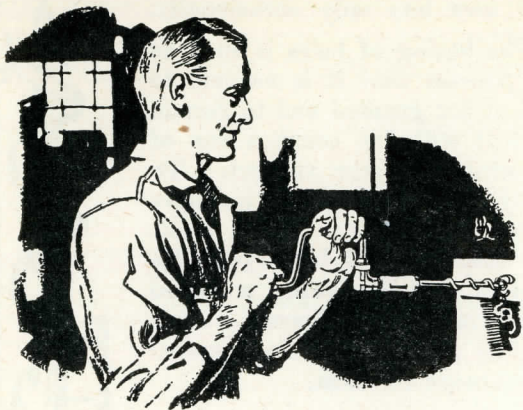


HOW

**to Select
Use and
Care for
BITS**







How to Select, Use and Care for Bits

Reason for Booklet

IF YOU will notice the bits that you see in work shops, tool chests and home or farm tool kits, you will discover that more information about bits would be very useful.

In many collections of tools you see bits that are practically useless, either because they have been unwisely selected, improperly used or not kept in condition. For these reasons, information on the selection, use and care of bits will be of practical advantage even to the person

who uses bits only occasionally.

The boring of holes is such an old process that it is natural to take it for granted and to remain content with the common run of knowledge on the subject. To many people an auger bit is simply a tool that bores a hole in wood. To them one hole looks just like another. It is simply a round cavity in a piece of wood. Also, all bits present a similar general appearance to them.

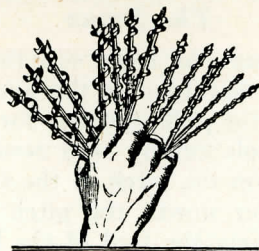
What to Expect of a Bit

Some users of bits are satisfied with a poor tool because they do not yet know that better ones exist. Their standard of wood-boring requirements is not very high. The modern price of lumber makes a poorly constructed bit an expensive tool because it may ruin a piece of wood that costs more than the price of a good bit.

A bit should carry itself into the wood, cut a clean hole, finish the hole neatly on the far side, and turn easily without pressure on the brace. The parts of a bit are the shank, the twist and the head.



The parts
of a bit

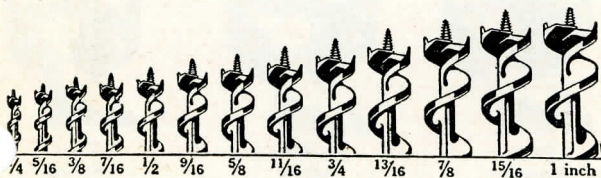


How to Select a Bit

It is taken for granted that you want a general purpose bit, one that will bore in all kinds of wood in general use. There are bits made for special purposes, such as Electrician Bits or Sugartree Bits. If you are working in some particular trade or boring one kind of wood all of the time, it is well to ask for a bit specially adapted to that purpose. However, unless you have some specific work in mind you will want a general purpose bit.

Size

Be sure to know the exact size that you want. The sizes of the bits are graded by one-sixteenth of an inch. A number nine (9) bit is nine-sixteenths ($\frac{9}{16}$) in diameter, etc.

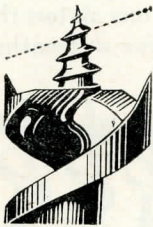


The Screw

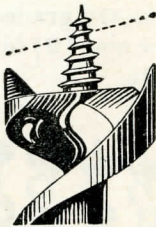
In looking over a bit begin with the screw point. It is the part that touches the wood first. The screw supplies the pulling power for the bit. The depth of the hole cut by each revolution of the bit depends upon the pitch of the threads of the screw. In other words, the pitch of the screw threads determines the feed of the bit.

For general work do not choose a screw with threads having either a steep pitch for heavy feed or a slow pitch for light feed. The very steep pitch makes the chip thicker and consequently harder to turn. The very slow pitch makes a thin chip and runs easily, but is tedious. Practical tests have determined the proper pitch for the threads of each size of general purpose bits.

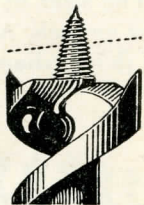
A screw should have ample metal in the center for strength and the threads should have the shape and depth that gives the most pulling power. It is important that the threads should merge with the cutting edges.



*Fast
Screw*



*Medium
Screw*



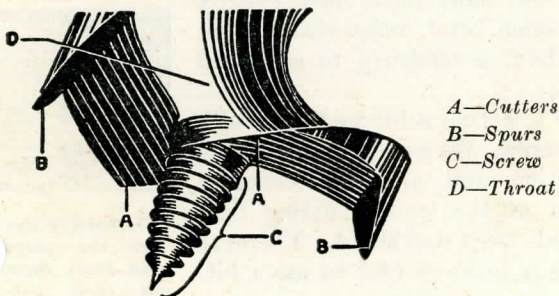
*Fine
Screw*

The Spurs

The spurs touch the wood immediately after the screw. The function of the spur is to score the outer edge of the chip in advance of the cutter. A spur that is too short will not entirely cut the edge of the chip and does not complete its work in advance of the cutter. An ideal spur is one whose length is suited to the feed of the bit, with sufficient metal for strength brought to a cutting edge, but without unnecessary thickness which wedges and drags.

The Cutting Lips

The third parts to consider in selecting a bit are the cutting lips. These follow the spurs and cut the chips, starting them on their outward journey. It is important that the edges of the two opposite cutters be on the same level, that sufficient metal is provided for wear, beveled to the proper angle and brought to a cutting edge. If one of them is only slightly higher or lower than the other it will result in one doing more than half of the work and the other less than half. The chips as they



leave the cutters flow through the throat of the bit.

The Clearance

In selecting a bit choose one with plenty of room in the throat for the chips to leave the cutting lips. The twist receives the chips from the throat and conveys them to the mouth of the hole. Ample room in the twist keeps the chips moving freely. The outside of the twist of a bit should be ground so that the diameter of the twist is slightly less than the diameter of the head, in order to permit the twist to follow the head into the hole without friction.

The Shank

The shank is the part of the bit that fits into the chuck of the brace. It has four tapered sides. All four sides must have exactly the same bevel, otherwise the bit will have a tendency to swing off center.

In selecting a bit we began with the screw. We noted its important function and also the essential point of the spurs, cutting lips, throat, twist and shank. The next thing is to know how to use a bit.



The screw supplies the pulling power for the bit



The spur scores the outer edge of the chip in advance of the cutter



The cutting lips cut the chips and start them on their outward journey

How to Use a Bit



The hang of a bit comes from the whole bit being balanced around a central line

The Hang

SOME carpenters have in their tool chest an old bit that they would not part with for a great deal of money. They have a favorite bit just as they have a favorite saw or favorite hammer. Years of use have proved that this certain bit has the right "hang." This "hang" comes from the whole bit being balanced around a central line. When this bit is fitted into the jaws of a brace the boring head has no tendency to swing off center. The bit is built to deliver all of its power in a straight line that runs through the tip of the screw. Also the head, the screw and the cutting parts are correctly built to work in unison.

In placing a bit in a brace be careful to get it in alignment. Some bits will always have a tendency to swing off center because they are not correctly built.

The Bit Head In Operation

When a bit is in operation its different parts are performing their function not one at a time,

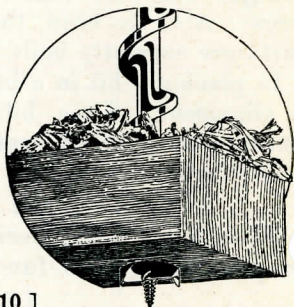
but in unison. The work of one part is preparatory to the work of another and they must be timed together just as a motor is timed. A poorly constructed part or a part out of time throws extra burden on the others. This makes the boring harder and the results of the effort unsatisfactory.

Watching the Chips

The feel of the brace and the effort required to turn it will indicate whether the parts of a bit are working together. If the chips are uniform in thickness it shows that the two cutting lips are in the right relation to each other. If both thick and thin chips come from the hole it shows that the cutters are not sharing their work equally. Also, if the edges of the chips are rough it shows the spurs are not doing their part. If the screw fills with fibre and releases, it shows that the threads are not smooth and are not properly joined with the cutting lips.

A wood-boring tool is not adapted for use in metal. On the other hand, a tool intended for metal is not well adapted for boring in wood.

A well designed auger bit goes accurately and easily into the wood, finishes off the hole neatly on the other side, and carries off the chips without clogging



How to Care for a Bit

Filing

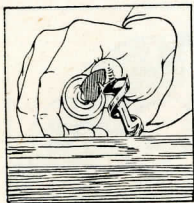
IN REGARD to the filing of bits, in general they get more filing than is necessary. Some users even go so far as to file a new bit before they have used it. On account of the close relation of the parts of the boring head to each other and on account of their small size, it is not possible to file away much metal from the head of the bit without reducing its boring quality. Look at the bit carefully before you begin to file it.

Resharpening a Spur

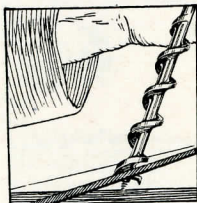
Rest the bit on a board with the screw pointing up. Draw the file lightly on the inside of the spur. Never file a spur on the outside because that will destroy some of the clearance of the bit and very definitely impair its usefulness.

Resharpening a Cutter

Rest the bit on a board with the screw down. File the cutters on the upper edge only. If you take material from one cutter, take the same amount from the other one. It is essential that both cut-



Resharpening the spur



Resharpening the cutter

ters be on the same level so that they will cut chips of equal thickness.

Re-straightening the Twist

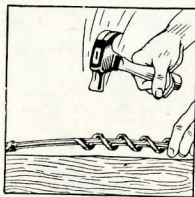
If through some abuse, such as heavy timber falling on a bit, it becomes sprung, it can often be straightened. Roll it on a level wood surface until the bend is located. Then tap it on the high side with light blows of a hammer.

Preventing Rust

Moisture from the hand or sap from green timber may occasionally cause rust spots. If bits are wiped off now and then with an oily rag, this will be prevented.

Have a Place For Bits

One of the most practical features in the care of bits is a place to keep them. When bits are kept loose in a tool box or in a drawer their length of life is shortened. The tool that you want is always at the bottom and in searching for it you turn over all the tools throwing some of the heavier pieces on top of the small bits. Finally you shut the drawer or slam the lid and jam the cutting edges against other pieces of steel.



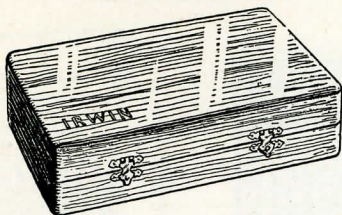
*Re-straightening
the twist*



*Oiling to prevent
rust*

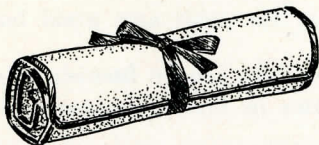
Two Kinds of Containers

The Borchest



THE IRWIN Borchest is the ideal way to keep auger bits free from damage and loss. The Borchest is made from high grade lumber, beautifully finished in lacquer. The bits are held in place by spring steel clips, making them instantly available at all times. See pages 14, 15, 16 and 17 for Irwin Sets available in Borchests.

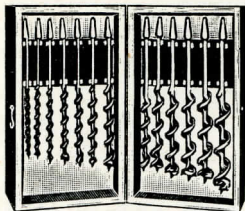
The Borkit



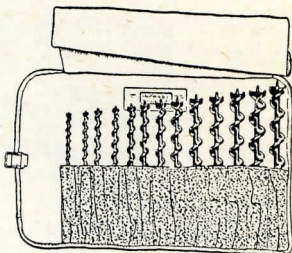
THE IRWIN Borkit is the popular package most preferred by workmen who carry tools on the job. It is a convenient way to carry a set of auger bits because it can be rolled into a small package. Individual pockets for every bit. When rolled, it is fastened by the strings. See pages 14, 15, 16 and 17 for Irwin Borkit Sets.

Carpenter Set

Containing 13 Bits



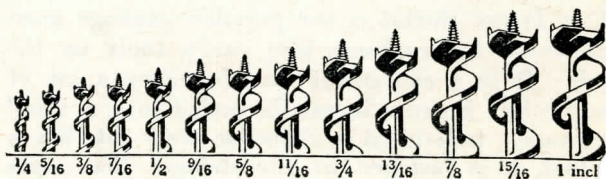
Borchest



Borkit

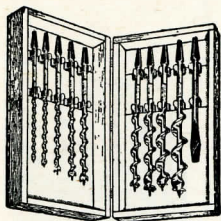
THIS is the assortment that meets the requirements of daily tool users. The following sizes are included in the set: one each of 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths. Thirteen bits in all—a size for most any wood boring job.

The Carpenter Set can be furnished in Irwin and Bluwin Grades in both Borchest and Borkit.

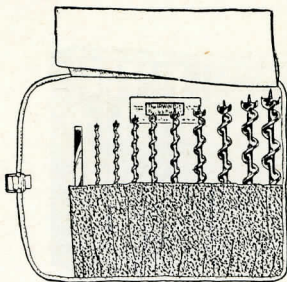


Handy Set

Containing 10 Bits



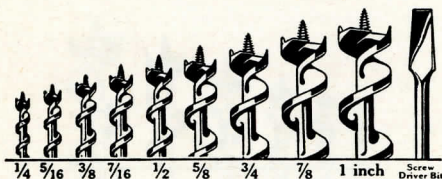
Borchest



Borkit

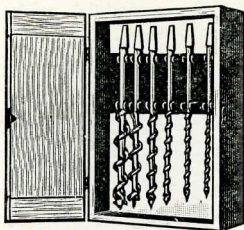
MEETS the requirements of the handy man who uses bits quite often in doing odd jobs of carpentry about the home. Sizes of bits in the Handy Set are as follows: Ten bits, one each of 4, 5, 6, 7, 8, 10, 12, 14 and 16-16ths and 1 screw driver bit.

The Handy Set can be furnished in Irwin and Bluwin Grades in both Borchest and Borkit.

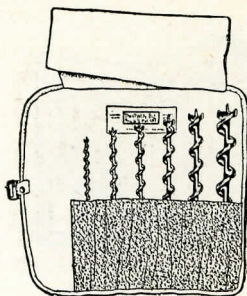


Home Set

Containing 6 Bits



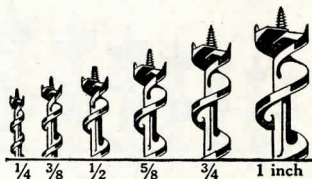
Borchest



Borkit

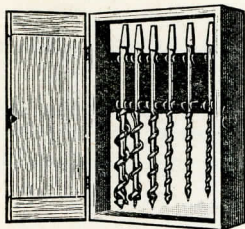
THIS assortment meets all general requirements around the home. Only the sizes found by experience to fill ordinary every day repair jobs are included. There are 6 bits in all, one each of 4, 6, 8, 10, 12 and 16-16ths.

Home Sets can be furnished in Irwin and Bluwin Grades in Borchest and Borkit.

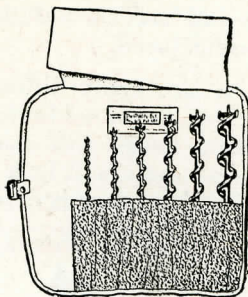


Little Six Set

Containing 6 Bits



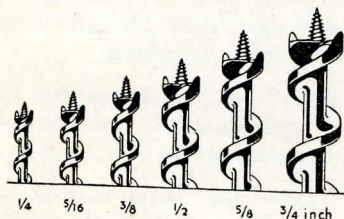
Borchest



Borkit

A COMPACT assortment of six popular size bits for general work around the home or shop. The bits included in this Little Six Set are as follows: Six bits, one each of 4, 5, 6, 8, 10 and 12-16ths.

Little Six Sets can be furnished in Irwin and Bluwin Grades in Borchest and Borkit.



Irwin Auger Bits

Many people believe that auger bits are all alike. They usually think of the regular auger bit they see and use around the house as the only type manufactured.

There are many different kinds of bits made to do specific wood-boring jobs—certain types of cutting heads will bore better and faster than others—some will bore more slowly and smoother and still another is designed for end grain boring.

Boring Heads for Specific Jobs



3-Head



5-Head



6-Head



7-Head

Above are shown four popular Irwin cutting heads—all designed to do better wood-boring jobs.

3-HEAD: Cuts rapidly in most woods. Used extensively by electricians and linemen.

5-HEAD: Recommended for use in construction and repair work by railroads, shipyards and bridge builders.

6-HEAD: Most widely used cutting head. Cuts fast and smoothly and is well adapted for general work.

7-HEAD: Designed for hard woods with den grain. Bores well in the end of timbers.

Irwin No. 62T



THE IRWIN 62T Mainbor auger bit is without doubt the most popular wood-boring tool in the world. It is used for general carpentry and in homes and workshops in practically every country in the world.

The length over-all of 62T bits range from approximately $7\frac{1}{2}$ " in the smaller sizes to $9\frac{1}{2}$ " in the larger sizes. The twist runs from 4" to 5" as the diameter increases. Sizes available from $4/16$ " to $24/16$ " inclusive.

No. 32T



The 32T is recommended for rapid boring in rough woods and for general use. Same general specifications as 62T except for cutting head. Available in sizes $4/16$ " to $16/16$ " inclusive.

No. 72T



The 72T is designed for use in hardwoods and for end-boring in timbers. Note flat boring head. Made in sizes $4/16$ " to $16/16$ " inclusive.



Electrician Bits

SUREBOR and Speedbor are two bits very much in demand among the electricians and linesmen and because of the similarity of the work they are also widely used by plumbers. For running lines, conduits, cables and boring holes for pipes a fast cutting bit is required because this is rough, hard work and because plaster and other obstructions are frequently met and a tough bit is necessary. Because such workers are frequently required to bore from cramped positions where a ratchet brace is needed, these men require a fast cutting bit such as Speedbor and Surebor.

No. 3E Electrician Bits



Very popular with electricians. Bores fast, and made to stand the rough work encountered in running lines and conduit. Because electricians are frequently required to bore from cramped positions where a ratchet brace is needed these men need a fast cutting bit such as the 3E. Length of twist 6". Over-all length 10". Made in 10/16", 11/16" and 12/16" only.

No. 32T



Used very often by electricians because of rapid boring and general work. Made in sizes 4/16" 16/16" inclusive. Over-all length 7½" to 9½".

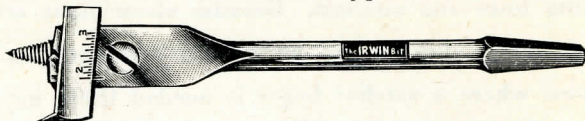
Irwin Expansive Bits

Micro-Dial Type



Dial type expansive bit. Dial size of hole you want to bore! Made in small size that bores from $\frac{5}{8}$ " to $1\frac{3}{4}$ " and large size $\frac{7}{8}$ " to 3".

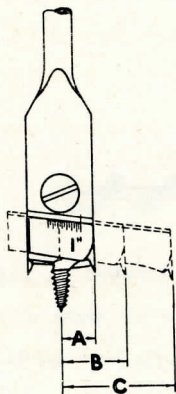
Lockhead Type



Solid one-piece forging with positive blade clamping device for accuracy. Small size bores $\frac{5}{8}$ " to $1\frac{1}{2}$ ". Large size $\frac{7}{8}$ " to 3".

How An Expansive Bit Works

At left is shown how a large size Irwin Lockhead expansive bit works. The cutting blade is first adjusted to cut the proper size hole and then clamped securely in place.

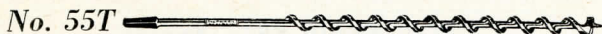


- A—Bores hole $\frac{7}{8}$ "
- B—Bores hole $1\frac{1}{2}$ "
- C—Bores hole 3"

Irwin Car Bits

Car bits are used for boring deep holes or through thick timbers. Used in railroad, bridge, pole work, etc. Made in solid center and single twist type. Twist length 12". Over-all length 18". Sizes 4/16" up.

Solid Center Type



Single Twist Type



Short Car Bits

Used for medium deep boring when timbers are too thick for regular auger bits and not heavy enough for 18" car bits. Short car bits are 8" twist and 12" over-all. Sizes 4/16" to 16/16" inclusive.



Irwin Ship Augers

Single twist type with square shank. Twist 10" to 18" long. Made with or without screw point. Sizes 6/16" to 24/16" inclusive.

No. 520



No. 521

No Screw



4-Way Shank Ship Augers

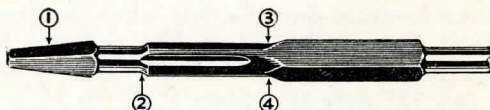
Made with patented 4-way shank. See cut below for details. Available with or without screw point. Twist length from 12" to 18". Sizes 6/16" to 24/16" inclusive.

515S



515W

No Screw



- | | |
|---|---|
| (1) Ready for use in bit brace. | (3) Cut off here for use in auger handles. |
| (2) Cut off here for use in electric drill. | (4) Cut off here for extension rod if extra length is needed. |

Miscellaneous Augers

Below are shown illustrations of other types of win wood-boring tools designed and made for specific boring jobs. Other special types can be furnished to meet most all boring jobs.

62R
Machine Bits



61T
Dowel Bits



91T
Sugar Tree Bits



74N
Nut Augers



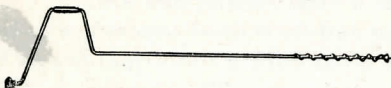
66-O Ring Augers

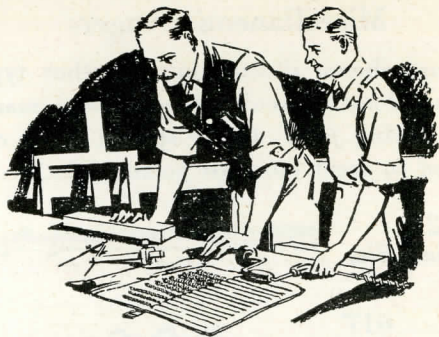


79-N Derrick Augers



Stump and Earth Augers





Special Bits for Special Jobs

MANY wood boring needs are special and peculiar. Frequently, much of the work must be done in wood of one kind. Again, the volume may be unusually large, making it advisable to devote special care to bit selection, with a view toward maximum speed and efficiency. In some instances, bits of special design are needed.

Manual training instructors find it helpful to include detailed information on bit operation in their lecture work, and at some time during the school year to conduct a series of tests to demonstrate the importance of intelligent bit selection.

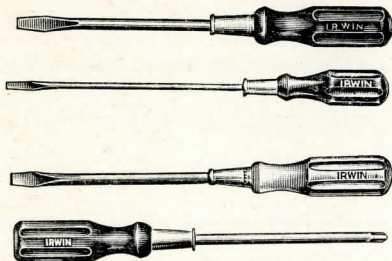
Accurate information on the theory of bit operation is helpful in many ways, and in cases where a large amount of work is to be done, proper bit selection is a vital production aid.

Our long and diversified experience in the manufacture of wood boring tools qualifies us to advise in special problems. This service is **FREE**.

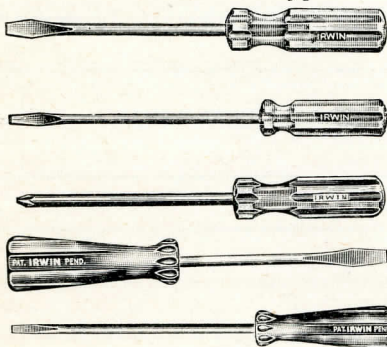
Irwin Nu-Series Screw Drivers

Irwin Nu-Series screw drivers are available in a wide range of sizes in plastic and wood handle types. Thin-blade cabinet and regular machinist drivers are furnished in blade lengths from 1" to 12" inclusive.

Wood Handle Type



Plastic Handle Type



*Heavy
Duty
Type*



*Screw
Driver
Bit*

This image shows a single sheet of off-white or cream-colored paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slightly textured appearance with some minor discoloration and small brown spots, possibly from age or handling. A small portion of a white circular object, likely a binder ring, is visible at the top right corner.

NOTES

This image shows a single sheet of off-white or cream-colored paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. On the right side, there are two circular punch holes, one near the top and one near the bottom, indicating it was designed to be part of a binder. The paper has a slightly textured appearance with some minor discoloration or foxing.



The Mark of Quality

The man who buys a bit sees only its surface. He is not equipped to measure its clearances or to test its temper. He can not estimate the experience that enters into its manufacture. He must take these things on faith. He must look for a token of responsibility.

This is what gives meaning to the Irwin trade mark. It is stamped on the shank of every Irwin made bit. It is the mark of the originator and sole manufacturer of the genuine Irwin bit. Genuine Irwin made bits have carried this identifying trade mark for over sixty years. It is the mark of quality and good tool efficiency in the United States and practically every foreign country.

May we suggest that when you are in the market for Auger Bits, insist upon IRWIN. Look for the trade mark shown above. You will find it stamped on the shank of every Irwin Bit.

THE IRWIN AUGER BIT COMPANY

Wilmington, Ohio, U.S.A.